Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently amended) A method of processing a projection data set of an object of interest, wherein the projection data is acquired by means of a source of electro-magnetic radiation generating a beam and by means of a radiation detector detecting the beam, the method comprising the step of:

rebinning the projection data set from a first geometry to a second geometry, resulting in a first rebinned projection data set,[[;]] wherein a second radial resolution of the first rebinned projection data set in the second geometry is higher than a first radial resolution of the projection data set in the first geometry; and

rebinning the first rebinned projection data set from the second geometry to a third geometry, resulting in a second rebinned projection data set.

2.   (Original) The method of claim 1,

wherein the projection data set in the first geometry comprises a first focus data set and a second focus data set;

wherein the first focus data set is acquired at a first position relative to the detector of a focal spot of the electro-magnetic radiation emitted from the source; and

wherein the second focus data set is acquired at a second position relative to the detector of a focal spot of the electro-magnetic radiation emitted from the source.

3.   (Currently amended) The method of claim 1, ~~further comprising the step of:~~
~~rebinning the first rebinned projection data set from the second geometry to a third geometry,~~
~~resulting in a second rebinned projection data set;~~
wherein the second rebinned projection data set comprises a third focus data set; and

wherein a third radial resolution of the third focus data set is higher than the first radial resolution of the projection data set in the first geometry.

4.   (Original) The method of claim 3,

wherein the first geometry is one of a fan-beam geometry and a cone-beam geometry;

wherein the second geometry is a parallel-beam geometry; and

wherein the third geometry is one of a fan-beam geometry and a cone-beam geometry.

5.   (Original) The method of claim 3,

wherein the rebinning of the projection data set from the first geometry to the second geometry is performed by a first angular interpolation; and

wherein the rebinning of the projection data set from the second geometry to the third geometry is performed by a second angular interpolation.

6.   (Original) The method of claim 5,

wherein the first and second angular interpolations are performed in a direction of a view-angle with a constant fan-angle.

7.   (Original) The method of claim 3, further comprising the step of:

reconstructing the object of interest by a filtered back-projection procedure;

wherein the filtered back-projection procedure is one of performed directly by using a voxel dependent magnification and performed after a further rebinning of the second rebinned projection data set from the first geometry to the second geometry without using a magnification.

8.   (Original) The method of claim 1,

wherein the source of electro-magnetic radiation is a polychromatic x-ray source;

wherein the source moves along a helical path around the object of interest; and

wherein the beam has one of a fan-beam geometry and a cone-beam geometry.

9.   (Currently amended) A data processing device, comprising:

a memory for storing a data set;

a data processor for processing a projection data set of an object of interest, wherein the projection data is acquired by means of a source of electro-magnetic radiation generating a beam and by means of a radiation detector detecting the beam, wherein the data processor is adapted for performing the following operation:

rebinning the projection data set from a first geometry to a second geometry, resulting in a first rebinned projection data set, [[;]] wherein a second radial resolution of the first rebinned projection data set in the second geometry is higher than a first radial resolution of the projection data set in the first geometry; and

rebinning the first rebinned projection data set from the second geometry to a third geometry, resulting in a second rebinned projection data set, wherein a third radial resolution is higher than the first radial resolution of the projection data set in the first geometry.

10.   (Currently amended) Data processing device according to claim 9,
~~wherein the data processor is further adapted for performing the following operation~~:
~~rebinning the first rebinned projection data set from the second geometry to a third geometry, resulting in a second rebinned projection data set~~;
wherein the projection data set in the first geometry comprises a first focus data set and a second focus data set;

wherein the first focus data set is acquired at a first position relative to the detector of a focal spot of the electro-magnetic radiation emitted from the source; and

wherein the second focus data set is acquired at a second position relative to the detector of a focal spot of the electro-magnetic radiation emitted from the source;

wherein the second rebinned projection data set comprises a third focus data set; and

wherein a third radial resolution of the third focus data set is higher than the first radial resolution of the projection data set in the first geometry.

11.   (Currently amended) An ~~CT~~ image scanner system, comprising:
a memory for storing a data set;

a data processor for processing a projection data set of an object of interest, wherein the projection data is acquired by means of a source of electro-magnetic radiation generating a beam and by means of a radiation detector detecting the beam, wherein the data processor is adapted for performing the following operation:

loading the projection data set;

rebinning the projection data set from a first geometry to a second geometry, resulting in a first rebinned projection data set;

wherein a second radial resolution of the first rebinned projection data set in the second geometry is higher than a first radial resolution of the projection data set in the first geometry; and

rebinning the first rebinned projection data set from the second geometry to a third geometry, resulting in a second rebinned projection data set, wherein a third radial resolution is higher than the first radial resolution of the projection data set in the first geometry.

12.   (Currently amended) The ~~CT~~ image scanner system according to claim 11, wherein the data processor is further adapted for performing the following operation:

rebinning the first rebinned projection data set from the second geometry to a third geometry, resulting in a second rebinned projection data set;

wherein the projection data set in the first geometry comprises a first focus data set and a second focus data set;

wherein the first focus data set is acquired at a first position relative to the detector of a focal spot of the electro-magnetic radiation emitted from the source; and

wherein the second focus data set is acquired at a second position relative to the detector of a focal spot of the electro-magnetic radiation emitted from the source;

wherein the second rebinned projection data set comprises a third focus data set; and

wherein a third radial resolution of the third focus data set is higher than the first radial resolution of the projection data set in the first geometry.

13.   (Currently amended) A computer readable storage medium encoded with computer executable instructions ~~program~~ for processing a projection data set of an object of interest,

~~wherein~~ the computer executable instructions, when executed by a processor ~~program~~ causes ~~a~~
the processor to perform the following operation ~~when the computer program is executed on the~~
~~processor~~:

loading the projection data set;

rebinning the projection data set from a first geometry to a second geometry, resulting in a first
rebinned projection data set. [[;]] wherein a second radial resolution of the first rebinned
projection data set in the second geometry is higher than a first radial resolution of the projection
data set in the first geometry; and

rebinning the first rebinned projection data set from the second geometry to a third geometry,
resulting in a second rebinned projection data set, wherein a third radial resolution is higher than
the first radial resolution of the projection data set in the first geometry.

14.   (Currently amended) The ~~c~~Computer readable storage medium encoded with computer
executable instructions ~~program~~ according to claim 13,

~~wherein the computer program causes the processor to perform the following further operation~~
~~when the computer program is executed on the processor:~~

~~rebinning the first rebinned projection data set from the second geometry to a third geometry,~~
~~resulting in a second rebinned projection data set;~~

wherein the projection data set in the first geometry comprises a first focus data set and a second
focus data set;

wherein the first focus data set is acquired at a first position relative to the detector of a focal
spot of the electro-magnetic radiation emitted from the source; and

wherein the second focus data set is acquired at a second position relative to the detector of a
focal spot of the electro-magnetic radiation emitted from the source;

wherein the second rebinned projection data set comprises a third focus data set; and

wherein a third radial resolution of the third focus data set is higher than the first radial
resolution of the projection data set in the first geometry.

15. (New) The data processing device of claim 9, wherein the data processor also processes
measurements of an attenuation caused to the cone beam by an object of interest.

16. (New) The data processing device according to claim 9, wherein the data processor performs the rebinning of the projection data set from a cone beam geometry to a parallel beam geometry and the rebinning of the rebinned projection data set from the parallel beam geometry to a cone beam geometry.

17. (New) The image scanner system according to claim 11, wherein at least one element of the radiation detector is adapted to measure an attenuation caused to the cone beam by an object of interest.

18. (New) The image scanner system according to claim 11, wherein the data processor further adapted to perform the following operation:

reconstructing an image of the radiation detector read-outs.

19. (New) The computer readable storage medium encoded with computer executable instructions according to claim 13, wherein the rebinning of the projection data set from the first geometry to the second geometry is performed by a first angular interpolation and the rebinning of the rebinned projection data set from the second geometry to the third geometry is performed by a second angular interpolation; wherein the first and second angular interpolations are performed in a direction of a view-angle with a constant fan-angle.

20. (New) The computer readable storage medium encoded with computer executable instructions according to claim 13, wherein the computer executable instructions, when executed by a processor causes the processor to perform the further operation of:

reconstructing the object of interest by a filtered back-projection procedure, wherein the filtered back-projection is performed by using a voxel dependent magnification and can also be performed after a further rebinning of the second rebinned projection data set from the first geometry to the second geometry when not using a voxel dependent magnification.